# *Project Baseline Summary Report*

Data Source: **EM CDB** Report Number: **GEN-01b**

Operations/Field Office: **River Protection** Print Date: **3/9/2000**

Site Summary Level: **Office of River Protection** HQ ID: **0390**

Project **RL-TW08 / Process Waste Privatization Infrastructure**

## General Project Information

### Project Description Narratives

**Purpose, Scope, and Technical Approach:**

Purpose: Part of the Tank Waste Remediation System (TWRS) project mission is to physically and chemically separate the Hanford Site's tank waste into low-activity waste (LAW) and high-level waste (HLW) fractions and to immobilize and dispose of them in an environmentally sound, safe, and cost-effective manner. To achieve this, a two-phased strategy that uses "best-in-class" capability from the private sector has been implemented to perform pretreatment, immobilization, and disposal of the LAW and HLW fractions. Phase I of privatization is a "proof of concept" phase during which approximately 10% percent (by volume) of the tank waste will be treated and disposed of (or interim stored for future disposal). Phase II of privatization will pretreat, immobilize, and dispose of the remainder of the tank waste, using full-scale production facilities.

The Privatization Infrastructure Program will provide the needed infrastructure to support the privatization contractor(s) during Phases I and II. Much of this support is essential in meeting the M-50, M-51, and M-60 Tri-Party Agreement milestones. Not developing the infrastructure needed by the privatization contractor would delay the pretreatment, immobilization, and disposal of the tank wastes by several years and would ultimately cause privatization to fail. During this delay, tanks would continue to age and deteriorate, increasing the probability of tank failures with potentially serious radiological and chemical consequences to the environment and to human health and safety.

The contract that DOE-RL and the privatization contractor signed in August 1998 establishes the general scope and timing requirements for the Privatization Infrastructure Program. These requirements are defined in more detail in the TWRS Privatization Project Interface Control Document (BNFL 1998), and will be further modified as a result of the DOE-RL's decision on whether to proceed with privatization in August 2000.

Scope: The Privatization Infrastructure Project provides the required facilities, physical interfaces and systems that will ensure that the privatization contractor(s) are integrated into the Hanford Site Infrastructure for both Phase I and Phase II. This project also provides funding which covers the cost for electricity and water used by the privatization contractor, as well as, funds for M&I costs associated with the M&I receiving, treating and disposing of radioactive solid waste from the privatization contractor. Telecommunications and sanitary waste systems will also be provided to the Phase II contractor's site as well. Upon completion of the respective phases, the added infrastructure system will be removed and the sites closed.

Technical Approach: The technical approach and technology initiatives for the Project to accomplish the Hanford Strategic Plan end point targets are identified below.

· Technical Approach - Privatization Infrastructure: Contracting agreements associated with soliciting a private contractor to provide the treatment service have been made. Using these contract documents as a basis and subsequent interaction with private contractors, infrastructure and interface requirements will be finalized. Parallel to this time line, a systems definition step was undertaken using initial contract requirements as a baseline. Through engineering studies covering each utility/service to be provided, an optimal approach using proven technologies was selected. Based upon the study findings, the Conceptual Design was completed in FY 97. These provide sufficient technical details for developing defensible cost estimates and project schedules. In addition, the Conceptual Design media developed was used for preparing specifications in support of acquisition. Definitive Design has been initiated. All Phase I related acquisitions will be completed by FY 2002. The completion date FY 2002 may be adjusted, by DOE, to

## Project Description Narratives

optimize resource utilization as the BNFL schedule details become available.

The turnover or custody transfer of feed tank AP-106 to the privatization contractors entails providing essential data and information to the contractors for the safe and efficient operation of the tanks while in their custody. Contracting agreements will define the final nature of the data and information needs, extent of tank modifications to be performed by the contractors, obligations related to the return of the tanks. In response to these agreements, turnover plans will be developed.

The Privatization Infrastructure Project will provide the following:
1. Project Management - Activities include management, control and reporting for all related infrastructure project activities.
2. Acquisition of Phase I Utilities and Services for:
   · Electricity
   · Raw and Sanitary Water
   · Site Development and Roads
   · Systems (acquisition only)
   · Turnover of Feed Tank AP-106 (acquisition only)
   · Radioactive Solid Waste
3. Acquisition of Phase II Utilities and Services:
   · Electricity
   · Site/Water/Roads
   · Liquid Effluent
   · Sewage Treatment
   · Radioactive Solid Waste
   · Telecommunications
4. Project Operations - Activities encompass funding and resources for the operation and maintenance of acquired infrastructure including funding for Hanford operational staff training and government furnished services.
5. D&D/Closure - Activities encompass D&D and removal of infrastructure systems after privatization contractors' facilities have gone through D&D.

**Project Status in FY 2006:**

Phase I Project startup and operations support to the Private Contractor will continue. Phase II Facilities/Systems and Services Acquisition activities conceptual design will complete in FY 2003. Definitive design will complete in FY 2006. Initial construction is scheduled to begin October 1, 2006. Guidance received for the FY 1999 MYWP required that all Infrastructure projects be complete by 2010.

**Post-2006 Project Scope:**

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Phase I Project Operations support will continue through completion. Following Phase I facilities deactivation, these facilities, along with added infrastructure will be decontaminated and decommissioned (D&D) and the site closed. Phase II Facilities/Systems and Services Acquisition will continue to turnkey status. Phase II operations support will be initiated and continue throughout the life of Phase II operations. Following Phase II completion, added infrastructure will be D&D and upon completion of final D&D privatization contractor facilities, the site will be closed.

**Project End State**

No follow-on projects will be necessary to meet site closure requirements. However, post-closure institutional controls may be necessary to be consistent with overall Hanford Site closure strategies..

Specific work activities to close the facilities under this Project to be performed by others at the end of this Project's mission are identified below.

**Cost Baseline Comments:**

Estimates supporting the Tank Waste Remediation Systems (TWRS) fiscal year (FY) 2001 Project Baseline Summaries (PBS) estimate were developed using Activity-Based Cost (ABC) estimating methodology consistent with the "Hanford Cost Estimating and Scheduling Guide," DOE/RL-97-90, Revision 0.

The TWRS (FY) 2001 PBS is a product of the development of the technical scope, schedule and cost baselines. The scope, schedule and cost baselines are interrelated and have been integrated. The Hanford Site Technical Baseline requirements have been incorporated in the TWRS Technical Baseline through development of TWRS technical specifications. Level 0 and Level 1 work logics were developed to define the activities and interfaces necessary to meet the technical requirements. For much of the TWRS work, Technical Basis Review (TBR) data packages were then prepared to decompose the Level 1 activities to a detailed, executable task level and document scope and resources necessary to complete the work. Activities and resources from the TBRs were input to Primavera (P3) to prepare the TWRS detailed baseline schedule. Pricing of the estimate was performed in P3 using standard rates and factors developed by the FDH Chief Financial Officer and approved by DOE for forward pricing purposes. The resource-loaded schedules are traceable to the TBR data packages. Costs generated by P3 were developed using the DOE-approved planning rates and were manually escalated using the DOE-approved escalation rates.

Due to significant variations in the current phases of the TWRS projects and available data and scope definition, many estimating techniques have been utilized in development of the cost estimate. They include definitive, parametric, analogy, trend analysis, level of effort and engineering judgement. ABC estimates for the scope of work have been prepared at the lowest level of detail practical. As expected, the level of scope definition and estimate detail is greatest for the near-term activities and less well defined in later years. Through the annual planning process and change control, the execution year and outyear estimate basis will continue to be refined, updated and validated.

The Estimate Basis is contained in numerous technical scope, schedule and cost baseline and supporting documents including TBR data packages.

**Safety & Health Hazards:**

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Hazards associated with this project will be typical of those associated with the construction, startup and operation of conventional utilities, ie. high voltage transmission lines, 13.8 KV. substation, raw/potable/fire water system extensions, site development and roadway expansion/construction. Excepting a liquid effluent piping tie-in, no radiological hazards have been identified other than those associated with construction activities undertaken on land free of indicated surface contamination but adjacent to contaminated sites (typical of construction activities in Hanford's 200 Area bench). No hazards to public and environment have been identified by this PBS.

The liquid effluent piping system extension is associated with very low activity radioactive and dangerous liquid effluents. The tie-in of this system extension will be managed to ensure zero exposure to dangerous liquids and limit radiation exposure to be well within site occupational limits.

Unresolved Safety Question (USQ) screenings were performed on each major utility element as part of the Conceptual Design Report and documented in the their respective appendices. No issues were uncovered which merited further safety investigation.

Because Project W-519 does not interface with any TWRS Facilities/Operations, the determination has been made that the TWRS Authorization Basis does not specifically apply to this project.

**Safety & Health Work Performance:**

See PBS TW10

**PBS Comments:**

See A.2.1 and A.2.2 - The project contains milestones delineating the start and completion of design/construction/startup contracts as well as milestones interfacing with the privatization contractor. None of the project milestones are at the TPA or HQ level but all do support the Privatization Contractors HQ and TPA milestones located under RL TW-06 and 07.

The target level funding reflected in Section B.1 is different than the baseline budget contained in this PBS, and reflects reductions in scope that would be taken from this project if needed enhanced performance targets are not realized for the site to meet the overall anticipated funding level. Specific impacts in FY 1999 and their consequences would be:

Tank Integrity Assessment ($1713K): Reduction in funding would create a delay of an additional year for completion of TPA milestone M-32-00, Complete Identified Dangerous Waste Tank Corrective Actions, Addition of the 1.7M to the existing FY 2000 budget would meet the regulatory issue in that year. Each year delay will delay compliance by a year.

Infrastucture Staff Requirement ($220K): Delays in Phase I Privatization and delay in the award of Phase IB could occur if the program definition and project document requirements are delayed due to inadequate resources.

**Baseline Validation Narrative:**

Local Operations Office Construction Project Validation for W-519 Phase I Acquisition Project was completed July 16, 1997.

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## General PBS Information

**Project Validated?** **Date Validated:**

**Has Headquarters reviewed and approved project?** Yes

**Date Project was Added:** 12/1/1997

**Baseline Submission Date:**

**FEDPLAN Project?** Yes

| **Drivers:** | **CERCLA** | **RCRA** | **DNFSB** | **AEA** | **UMTRCA** | **State** | **DOE Orders** | **Other** |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Y |

## Project Identification Information

**DOE Project Manager:** W.J. Taylor

**DOE Project Manager Phone Number:** 509-372-3864

**DOE Project Manager Fax Number:** 509-376-8532

**DOE Project Manager e-mail address:** william_j_taylor@rl.gov

**Is this a High Visibility Project (Y/N):** Y

## Planning Section

### Baseline Costs (in thousands of dollars)

| | 1997-2006 Total | 2007-2070 Total | 1997-2070 Total | 1997 | Actual 1997 | 1998 | Actual 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PBS Baseline (current year dollars) | 206,098 | 2,600,193 | 2,806,291 | 5,893 | 1,772 | 5,973 | 5,133 | 12,603 | 18,914 | 21,126 | 13,172 | 14,026 | 40,957 | 43,559 | 29,875 |
| PBS Baseline (constant 1999 dollars) | 189,175 | 1,696,700 | 1,885,875 | 5,893 | 1,772 | 5,973 | 5,133 | 12,603 | 18,525 | 20,246 | 12,352 | 12,869 | 36,770 | 38,265 | 25,679 |
| PBS EM Baseline (current year dollars) | 206,098 | 2,600,193 | 2,806,291 | 5,893 | 1,772 | 5,973 | 5,133 | 12,603 | 18,914 | 21,126 | 13,172 | 14,026 | 40,957 | 43,559 | 29,875 |

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**Baseline Costs (in thousands of dollars)**

| | 1997-2006 Total | 2007-2070 Total | 1997-2070 Total | 1997 | Actual 1997 | 1998 | Actual 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PBS EM Baseline (constant 1999 dollars) | 189,175 | 1,696,700 | 1,885,875 | 5,893 | 1,772 | 5,973 | 5,133 | 12,603 | 18,525 | 20,246 | 12,352 | 12,869 | 36,770 | 38,265 | 25,679 |

| | 2007 | 2008 | 2009 | 2010 | 2011-2015 | 2016-2020 | 2021-2025 | 2026-2030 | 2031-2035 | 2036-2040 | 2041-2045 | 2046-2050 | 2051-2055 | 2056-2060 | 2061-2065 | 2066-2070 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PBS Baseline (current year dollars) | 39,945 | 44,349 | 74,534 | 75,515 | 587,693 | 666,025 | 649,744 | 456,515 | 5,873 | 0 | 0 | 0 | | | | |
| PBS Baseline (constant 1999 dollars) | 33,595 | 36,496 | 60,016 | 59,497 | 433,979 | 441,118 | 385,968 | 243,225 | 2,806 | 0 | 0 | 0 | | | | |
| PBS EM Baseline (current year dollars) | 39,945 | 44,349 | 74,534 | 75,515 | 587,693 | 666,025 | 649,744 | 456,515 | 5,873 | 0 | 0 | 0 | | | | |
| PBS EM Baseline (constant 1999 dollars) | 33,595 | 36,496 | 60,016 | 59,497 | 433,979 | 441,118 | 385,968 | 243,225 | 2,806 | 0 | 0 | 0 | | | | |

**Baseline Escalation Rates**

| 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00% | 0.00% | 0.00% | 2.10% | 2.20% | 2.20% | 2.20% | 2.20% | 2.20% | 2.20% | 2.20% | 2.20% | 2.20% |

| 2010 | 2011-2015 | 2016-2020 | 2021-2025 | 2026-2030 | 2031-2035 | 2036-2040 | 2041-2045 | 2046-2050 | 2051-2055 | 2056-2060 | 2061-2065 | 2066-2070 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.20% | 2.20% | 2.20% | 2.20% | 2.20% | 2.20% | 2.20% | 2.20% | 2.20% | | | | |

## Project Reconciliation

**Project Completion Date Changes:**

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## Project Reconciliation

**Previously Projected End Date of Project:** 9/30/2036

**Current Projected End Date of Project:** 9/30/2031

**Explanation of Project Completion Date Difference (if applicable):**

## Project Cost Estimates (in thousands of dollars)

| | | | | | |
|---|---|---|---|---|---|
| **Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):** | 1,759,475 | **Actual 1997 Cost:** | 1,772 | **Actual 1998 Cost:** | 5,133 |
| **Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):** | 1,752,570 | **Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):** | | | 47,319 |
| **Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):** | 1,799,889 | | | | |

## Project Cost Changes

| | Cost Adjustments | Reconciliation Narratives |
|---|---|---|
| **Cost Change Due to Scope Deletions (-):** | | |
| **Cost Reductions Due to Efficiencies (-):** | | |
| **Cost Associated with New Scope (+):** | | |
| **Cost Growth Associated with Scope Previously Reported (+):** | | |
| **Cost Reductions Due to Science & Technology Efficiencies (-):** | | |
| **Subtotal:** | 1,799,889 | |
| **Additional Amount to Reconcile (+):** | 74,120 | |
| **Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):** | **1,874,009** | |

## Milestones

| Milestone/Activity | Field Milestone Code | Original Date | Baseline Date | Legal Date | Forecast Date | Actual Date | EA | DNFSB | Mgmt. Commit. | Key Decision | Intersite |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Begin Privatization Infrastructure Project | PBS-97-007 | | 2/28/1997 | | | | | | | | |
| PBS Mission Completion | PBS-MC-007 | | 9/30/2031 | | | | | | | | |
| PBS Project End | PBS-PE--007 | | 9/30/2031 | | | | | | | | |

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**Milestones - Part II**

| Milestone/Activity | Field Milestone Code | Critical Decision | Critial Closure Path | Project Start | Project End | Mission Complete | Tech Risk | Work Scope Risk | Intersite Risk | Cancelled | Milestone Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Begin Privatization Infrastructure Project | PBS-97-007 | | | Y | | | | | | | Administrative input to document the start of this PBS. |
| PBS Mission Completion | PBS-MC-007 | | | | | Y | | | | | Administrative input to document the mission completion of this PBS. |
| PBS Project End | PBS-PE--007 | | | | Y | | | | | | Administrative input to document the project end of this PBS. |